

## **ACRONYMS & ABBREVIATIONS**

<b>AB</b>	<b>Accreditation Body</b>
<b><u>ANSI</u></b>	<b>American National Standards Institute<sup>i</sup></b>
<b><u>AOAC</u></b>	<b>Formerly the Association of Official Analytical Chemists, now AOAC International</b>
<b><u>APLAC</u></b>	<b>Asia Pacific Laboratory Accreditation Cooperation (Regional Accreditation Cooperation)</b>
<b><u>APMP</u></b>	<b>Asia Pacific Metrology Program (Regional Metrology Organization for Asia Pacific)</b>
<b><u>ASTM</u></b>	<b>American Society for Testing and Materials, now ASTM International</b>
<b><u>BIPM</u></b>	<b>International Bureau of Weights and Measures/Bureau International des Poids et Mesures<sup>ii</sup></b>
<b>CASCO</b>	<b>ISO/IEC Joint Committee on Conformity Assessment</b>
<b><u>CGPM</u></b>	<b>General Conference on Weights and Measures/Conférence Générale des Poids et Mesures<sup>iii</sup></b>
<b><u>CIPM</u></b>	<b>International Committee for Weights and Measures/Comité International des Poids et Mesures<sup>iv</sup></b>
<b><u>CIPM MRA</u></b>	<b>Mutual Recognition Arrangement</b>
<b><u>CC</u></b>	<b>Consultative Committee<sup>v</sup></b>
<b><u>CCAUV</u></b>	<b>Consultative Committee for Acoustics, Ultrasound and Vibration/Comité Consultatif de l'Acoustique, des Ultrasons et des Vibrations</b>
<b><u>CCEM</u></b>	<b>Consultative Committee for Electricity and Magnetism/Comité Consultatif d'Électricité et Magnétisme</b>
<b><u>CCL</u></b>	<b>Consultative Committee for Length/Comité Consultatif des Longueurs</b>
<b><u>CCM</u></b>	<b>Consultative Committee for Mass and Related Quantities/Comité Consultatif pour la Masse et les Grandeurs Apparentées</b>
<b><u>CCPR</u></b>	<b>Consultative Committee for Photometry and Radiometry/Comité Consultatif de Photométrie et Radiométrie</b>
<b><u>CCQM</u></b>	<b>Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology/Comité Consultatif pour la Quantité de Matière : Métrologie en Chimie et Biologie</b>
<b><u>CCRI</u></b>	<b>Consultative Committee for Ionizing Radiation/Comité Consultatif des Rayonnements Ionisants</b>
<b><u>CCT</u></b>	<b>Consultative Committee for Thermometry/Comité Consultatif de Thermométrie</b>
<b><u>CCTF</u></b>	<b>Consultative Committee for Time and Frequency/Comité Consultatif du Temps et des Fréquences</b>
<b><u>CCU</u></b>	<b>Consultative Committee for Units/Comité Consultatif des Unités</b>
<b><u>CIE</u></b>	<b>International Commission on Illumination/Commission Internationale de l'Éclairage</b>
<b><u>CODATA</u></b>	<b>Committee on Data for Science and Technology<sup>vi</sup></b>
<b><u>CMC</u></b>	<b>Calibration and Measurement Capabilities</b>
<b>DI</b>	<b>Designated Institute<sup>vii</sup></b>
<b>DIS</b>	<b>Draft International Standard</b>

<b>EA</b>	<b>European co-operation for Accreditation (Regional Accreditation Cooperation for Europe)</b>
<b>ESA</b>	<b>European Space Agency (a signatory of the CIPM MRA)</b>
<b><u>EURAMET</u></b>	<b>The European Association of National Metrology Institutes, Regional Metrology Organization for Europe</b>
<b><u>GATT</u></b>	<b>General Agreement on Tariffs and Trade (see WTO)<sup>viii</sup></b>
<b><u>GUM</u></b>	<b>Guide to the Expression of Uncertainty in Measurement<sup>ix</sup></b>
<b><u>IAAC</u></b>	<b>Inter-American Accreditation Cooperation<sup>x</sup></b>
<b>IAEA</b>	<b>International Atomic Energy Agency (a signatory of the CIPM MRA)</b>
<b><u>IAU</u></b>	<b>International Astronomical Union</b>
<b><u>ICAC</u></b>	<b>ANSI's International Conformity Assessment Committee (the U.S. interface to ISO CASCO)</b>
<b><u>IEC</u></b>	<b>International Electrotechnical Commission/Commission Électrotechnique Internationale</b>
<b><u>IEEE</u></b>	<b>Institute of Electrical and Electronics Engineers<sup>xi</sup></b>
<b><u>ILAC</u></b>	<b>International Laboratory Accreditation Cooperation</b>
<b><u>IMEKO</u></b>	<b>International Measurement Confederation<sup>xii</sup></b>
<b>IRMM</b>	<b>Institute for Reference Materials and Measurement (a signatory of the CIPM MRA)</b>
<b><u>ISO</u></b>	<b>International Organization for Standardization</b>
<b><u>ISO/REMCO</u></b>	<b>ISO's Committee on reference materials</b>
<b><u>ITU</u></b>	<b>International Telecommunication Union</b>
<b><u>IUPAC</u></b>	<b>International Union of Pure and Applied Chemistry</b>
<b><u>IUPAP</u></b>	<b>International Union of Pure and Applied Physics</b>
<b><u>JCGM</u></b>	<b>BIPM's Joint Committee on the Guides to Metrology: VIM and GUM</b>
<b><u>JCRB</u></b>	<b>BIPM's Joint Committee of the Regional Metrology Organizations</b>
<b>JCTLM</b>	<b>Joint Committee for Traceability in Laboratory Medicine</b>
<b>KCDB</b>	<b>Key Comparison Database<sup>xiii</sup></b>
<b>KCRU</b>	<b>Key Comparison Reference Uncertainty</b>
<b>KCRV</b>	<b>Key Comparison Reference Value</b>
<b><u>MSC</u></b>	<b>Measurement Science Conference<sup>xiv</sup></b>
<b><u>NCSLI</u></b>	<b>NCSL International (formerly National Conference of Standards Laboratories)<sup>xv</sup></b>
<b>NMI</b>	<b>National Metrology Institute</b>
<b><u>NVLAP</u></b>	<b>National Voluntary Laboratory Accreditation Program<sup>xvi</sup></b>
<b><u>OIML</u></b>	<b>International Organization of Legal Metrology/Organisation Internationale de Métrologie Légale<sup>xvii</sup></b>

<a href="#"><u>RMO</u></a>	<b>Regional Metrology Organization</b>
<a href="#"><u>SCO</u></a>	<b>NIST's Standards Coordination Office</b>
<b>SDO</b>	<b>Standards Development Organization</b>
<b>SI</b>	<b>International System of Units/Système International d'Unités<sup>xviii</sup></b>
<a href="#"><u>SIM</u></a>	<b>Inter-american Metrology System/Sistema Interamericano de Metrologia (the Regional Metrology Organization of the Americas)</b>
<a href="#"><u>TAG</u></a>	<b>Technical Advisory Group</b>
<a href="#"><u>TBT</u></a>	<b>Technical Barriers to Trade<sup>xix</sup> (also see WTO)</b>
<a href="#"><u>UTC</u></a>	<b>Universal Time Coordinate (French: temps universel coordonné)<sup>xx</sup></b>
<a href="#"><u>VIM</u></a>	<b>International Vocabulary of Basic and General Terms in Metrology<sup>xxi</sup></b>
<a href="#"><u>WHO</u></a>	<b>World Health Organization<sup>xxii</sup></b>
<a href="#"><u>WMO</u></a>	<b>World Meteorological Organization<sup>xxiii</sup></b>
<a href="#"><u>WTO</u></a>	<b>World Trade Organization<sup>xxiv</sup></b>

---

<sup>i</sup> ANSI coordinates the U.S. private sector voluntary standardization system. ANSI represents U.S. interests in regional and international standardization. ANSI is the U.S. representative and dues-paying member of ISO and IEC (via the U.S. National Committee). ANSI accredits U.S. Technical Advisory Groups to ISO.

ANSI does not develop standards. ANSI accredits standards development organizations that in turn develop standards using the procedures that ANSI sets forth in their publication, ANSI Essential Requirements: Due process requirements for American National Standards. As of 2015, there are about 200 standards developers are accredited by ANSI (according to their website) and there are more than 10,000 American National Standards (ANS).

ANSI is also a conformity assessment body. They accredit certification bodies in a variety of areas: food protection managers, food-handlers, and product certifications in a variety of sector specific programs, environmental management including greenhouse gas verification, energy, and eco-labeling. Their website contains an all-inclusive listing of their conformity assessment services. [www.ansi.org](http://www.ansi.org)

<sup>ii</sup> The BIPM was created by the Meter Convention, signed on 20 May 1875. By virtue of the Meter Convention, the BIPM is an intergovernmental organization. States that have ratified the Meter Convention in accordance with their national procedures are States Parties to the Meter Convention and therefore Member States of the BIPM.

The BIPM develops the technical and organizational infrastructure of the International System of Units (SI) as the basis for world-wide traceability of measurement results. This is achieved through the technical activities in its laboratories and through international coordination.

The BIPM operates measurement and standards laboratories, providing a select genre of calibrations for its Member States. The physical location of the BIPM is at the Pavillon de Breteuil, in the Parc de Saint-Cloud at Sevres France.

The CIPM MRA is coordinated jointly by the BIPM and the Regional Metrology Organizations. The BIPM liaises with intergovernmental organizations (OIML, IAEA, WMO, and WHO), international bodies (ILAC and ISO), and through joint committees (JCGM and JCTLM).

<sup>iii</sup> The CGPM is made up of delegates of the governments of the Member States and observers from the Associates of the CGPM. The General Conference receives the report of the International Committee for Weights and Measures (CIPM) on work accomplished; it

---

discusses and examines the arrangements required to ensure the propagation and improvement of the International System of Units (SI); it endorses the results of new fundamental metrological determinations and various scientific resolutions of international scope; and it decides all major issues concerning the organization and development of the BIPM, including the dotation of the BIPM. The CGPM meets in Paris, usually once every four years.

<sup>iv</sup> The principal task of the CIPM is to promote world-wide uniformity in units of measurement and it does this by direct action or by submitting draft resolutions to the General Conference (CGPM).

Duties of the CIPM include the responsibility to:

- discuss the work of the BIPM under the delegated authority of the CGPM;
- issue an Annual Report on the administrative and financial position of the BIPM to the governments of the States Parties to the Meter Convention;
- discuss metrological work that Member States decide to do in common, and set up and coordinate activities between specialists in metrology;
- make appropriate Recommendations;
- commission reports in preparation for meetings of the CGPM, for example the Blevin and Kaarls reports, and others such as the SI Brochure.

The CIPM is made up of eighteen individuals, each of a different nationality. The presidents of the Consultative Committees are appointed by, and are normally members of, the CIPM. In 2014, Dr. Willie May, Director of NIST, was re-elected as the Vice President of the CIPM.

The CIPM meets every year (since 2011 in two sessions per year) and, among other matters, discusses reports presented to it by its Consultative Committees. Reports of the meetings of the CGPM, the CIPM, and all the Consultative Committees, are published by the BIPM.

<sup>v</sup> The CCs are scientific bodies created by the CIPM to assist in its scientific work. The committees bring together the world's experts. Among the tasks of these Consultative Committees are the detailed consideration of advances in physics that directly influence metrology, the preparation of Recommendations for discussion at the CIPM, the identification, planning and execution of key comparisons of national measurement standards, and the provision of advice to the CIPM on the scientific work in the laboratories of the BIPM.

<sup>vi</sup> CODATA is an interdisciplinary Scientific Committee of the International Council for Science (ICSU), which works to improve the quality, reliability, management and accessibility of data relevant to all fields of science and technology. CODATA was established over 30 years ago by ICSU.

The purpose of the CODATA Task Group on Fundamental Constants (TGFC) is "to periodically provide the scientific and technological communities with a self-consistent set of internationally recommended values of the basic constants and conversion factors of physics and chemistry based on all of the relevant data available at a given point in time."

The CODATA-TGFC is not constituted under the auspices of the BIPM, but because of the close linkage between the SI units and fundamental constants, it enjoys a close relationship with the CCU and the BIPM. Its meetings are usually convened at the BIPM.

The CODATA-TGFC is chaired by Dr. David Newell at NIST. Dr. Peter Mohr and Dr. Barry Taylor of NIST are also members of the TGFC.

<sup>vii</sup> National metrology institutes (NMIs) have the responsibility of maintaining the national measurement standards and disseminating the SI units nationally (i.e. they provide metrological traceability). The CIPM MRA, signed by the Directors of the NMIs, provides a peer review system to facilitate international recognition of national measurement standards and calibration and measurement capabilities (CMCs), including the calibration certificates issued by NMIs. In many countries the NMI shares this responsibility with one or more Designated Institutes (DIs), which, like the NMI, operate at the top of the national metrology system. DIs play a crucial role in complementing the fields of activities of the NMI and bring in expertise in metrological areas not covered by the NMI, thus making an efficient use of the available national resources. These additional DIs participate in the CIPM MRA within their limited area of activity.

<sup>viii</sup> The General Agreement on Tariffs and Trade (GATT) covers international trade in goods. The workings of the GATT agreement are the responsibility of the Council for Trade in Goods (Goods Council) which is made up of representatives from all WTO member countries. The current chair is Ambassador Hamish MCCORMICK (Australia).

---

The Goods Council has 10 committees dealing with specific subjects (such as agriculture, market access, subsidies, anti-dumping measures and so on). Again, these committees consist of all member countries. Also reporting to the Goods Council are a working party on state trading enterprises, and the Information Technology Agreement (ITA) Committee.

[https://en.wikipedia.org/wiki/General\\_Agreement\\_on\\_Tariffs\\_and\\_Trade](https://en.wikipedia.org/wiki/General_Agreement_on_Tariffs_and_Trade)

General Agreement on Tariffs and Trade (GATT) was a multilateral agreement regulating international trade. According to its preamble, its purpose was the "substantial reduction of tariffs and other trade barriers and the elimination of preferences, on a reciprocal and mutually advantageous basis." It was negotiated during the [United Nations Conference on Trade and Employment](#) and was the outcome of the failure of negotiating governments to create the [International Trade Organization](#) (ITO). GATT was signed by 23 nations in Geneva on October 30, 1947 and took effect on January 1, 1948. It lasted until the signature by 123 nations in Marrakesh on April 14, 1994 of the Uruguay Round Agreements, which established the [World Trade Organization](#) (WTO) on January 1, 1995. The original GATT text (GATT 1947) is still in effect under the WTO framework, subject to the modifications of GATT 1994.

<sup>ix</sup> The Guide to the Expression of Uncertainty in Measurement (known as the GUM) is published by the BIPM's JCGM Working Group on the Expression of Uncertainty in Measurement. Dr. Antonio Possolo, Chief Statistician for NIST represents the IEC on this Working Group.

<sup>x</sup> IAAC is the Accreditation Cooperation for the Americas. NVLAP is a signatory to the IAAC MLA. Ileana Martinez and Barbara Belzer from NVLAP are IAAC Executive Committee members. Ileana is the Chair of IAAC.

<sup>xi</sup> IEEE is one of the leading standards making organizations with nearly 1,000 active standards and over 500 under development. IEEE standards affect a wide range of industries including: power and energy, biomedical and healthcare, information technology, telecommunications, nanotechnology, and transportation. IEEE hosts more than 1600 annual conferences and meetings. IEEE produces more than 30% of the world's literature in the electrical and electronics engineering and computer science fields. They publish over 100 peer reviewed journals. NIST staff participate in nearly all facets of IEEE's portfolio.

<sup>xii</sup> NIST became a member of IMEKO in 2015.

<sup>xiii</sup> The KCDB is a database that supports the Appendices of the CIPM MRA:

Appendix A - Listing of Participants in the CIPM MRA;

Appendix B - Key and supplementary comparisons;

Appendix C - Calibration and Measurement Capabilities (quantities for which calibration and measurement certificates are recognized by the Institutes participating in the Arrangement); and

Appendix D - List and short description of key comparisons

<sup>xiv</sup> The Measurement Science Conference was founded in 1970 to promote education in Measurement Science related disciplines. Its membership base was initially strongly rooted in the Military branch calibration labs, along with commercial cal labs, instrument producers, and other contracted service providers. NBS also supported their conference by providing tutorials and presentations. NIST currently is providing Seminars and Tutorials for this year's conference.

<sup>xv</sup> NCSLI was formed in 1961 (as The National Conference of Standards Laboratories, dba, NCSL International) to promote cooperative efforts for solving the common problems faced by measurement laboratories. Their first meeting was hosted by NBS/NIST. There have been many NIST employees and managers who have been active members of NCSLI. Today, NCSLI has over 1000 Member Organizations from academic, scientific, industrial, commercial and government facilities around the world. Dr. Jim Olthoff is the current President of NCSL International. Greg Strouse is the NIST liaison to NCSLI. NCSLI is a nonprofit organization, whose membership is open to any organization with an interest in the science of measurement and its application in research, development, education, or commerce.

<sup>xvi</sup> NIST administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP provides accreditation services through various laboratory accreditation programs (LAPs), which are established on the basis of requests and demonstrated need. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. NVLAP is one of the oldest accreditation bodies in the world, and is the original accreditation body in the U.S. Accreditation requirements are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. NVLAP is a signatory to the ILAC, APLAC, and IAAC MRAs. Thus, the accreditations they grant are internationally recognized and accepted.

<sup>xvii</sup> Through authority delegated by the U.S. State Department, the International Legal Metrology Program in the NIST Office of Weights and Measures facilitates U.S. participation in the technical work of the OIML. OIML is a treaty organization that develops voluntary standards (called Recommendations) intended to be used to harmonize national legislation among Member States in areas

---

where regulated instruments and measurements are involved. In 2015, there were 60 member states and an additional 68 corresponding country members that participate in OIML. The International Committee of Legal Metrology (CML) is the functional decision-making body of the Organization. Dr. Charles Ehrlich from the Office of Weights and Measures is the CML member from the US.

<sup>xviii</sup> Together NIST SP 330 and NIST SP 811 provide the legal interpretation of and guidelines for the use of the SI in the United States. The NIST Guide for the use of the International System of Units, SP 811 <http://www.nist.gov/pml/pubs/sp811/>, The Federal Register Notice on the Interpretation of the International System of Units for the United States [http://www.nist.gov/pml/wmd/metric/upload/FRN\\_Vol\\_73\\_No\\_96\\_16May2008\\_SI\\_Interpretation.pdf](http://www.nist.gov/pml/wmd/metric/upload/FRN_Vol_73_No_96_16May2008_SI_Interpretation.pdf), and The International System of Units, SP 330 is the US version of the English text of the eighth edition of the BIPM SI Brochure <http://www.nist.gov/pml/pubs/sp330/index.cfm>

<sup>xix</sup> Systems such as the International Laboratory Accreditation Cooperation are increasingly prominent in TBT committee discussions. Recognition of conformity assessment results reduces the incidents of technical barriers to trade.

<sup>xx</sup> UTC is the primary time standard by which the world regulates time.

<sup>xxi</sup> Working Group 2 of the JCGM has responsibility for maintaining the International Vocabulary of Metrology (VIM). Dr. Charles Ehrlich represents OIML and is the Convenor of the Working Group.

<sup>xxii</sup> WHO is a stakeholder of ILAC.

<sup>xxiii</sup> WMO is a signatory to the CIPM MRA.

<sup>xxiv</sup> WTO is the only international organization dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible."

The United States of America has been a WTO member since 1 January 1995 and a member of GATT since 1 January 1948.

WTO has 164 nation members as of 29 July 2016.

The WTO is run by its member governments. All major decisions are made by the membership as a whole, either by ministers (who meet at least once every two years) or by their ambassadors or delegates (who meet regularly in Geneva). Decisions are normally taken by consensus.

In this respect, the WTO is different from some other international organizations such as the World Bank and International Monetary Fund. In the WTO, power is not delegated to a board of directors or the organization's head. When WTO rules impose disciplines on countries' policies, that is the outcome of negotiations among WTO members. The rules are enforced by the members themselves under agreed procedures that they negotiated, including the possibility of trade sanctions. But those sanctions are imposed by member countries, and authorized by the membership as a whole. This is quite different from other agencies whose bureaucracies can, for example, influence a country's policy by threatening to withhold credit. Reaching decisions by consensus among some 150 members can be difficult. Its main advantage is that decisions made this way are more acceptable to all members. And despite the difficulty, some remarkable agreements have been reached. Nevertheless, proposals for the creation of a smaller executive body — perhaps like a board of directors each representing different groups of countries — are heard periodically. But for now, the WTO is a member-driven, consensus-based organization.